		Pushing the Enve	elope
		2005 Science	
Curriculum Framework			
Arkansas Science			
Grade 5			
Activity/Lesson	State	Standards	
			Students shall demonstrate and apply
			knowledge of matter, including properties and
			changes, using appropriate safety procedures,
			equipment, and technology: Investigate
			scientists, careers, and historical breakthroughs
History of Aviation			related to physical properties, physical changes,
Propulsion (pgs. 5-9)	AR	SCI.5.PS.5.5.10	and states of matter
			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
			technology: Investigate careers, scientists, and
History of Aviation			historical breakthroughs related to simple
Propulsion (pgs. 5-9)	AR	SCI.5.PS.6.5.7	machines and potential and kinetic energy
			Students shall demonstrate and apply
			knowledge of matter, including properties and
			changes, using appropriate safety procedures,
Chemistry (pgs. 25-			equipment, and technology: Conduct scientific
41)	AR	SCI.5.PS.5.5.2	investigations on physical properties of objects
			Students shall demonstrate and apply
			knowledge of matter, including properties and
0			changes, using appropriate safety procedures,
Chemistry (pgs. 25-	1.5	001500550	equipment, and technology: Identify common
41)	AR	SCI.5.PS.5.5.3.a	examples of physical properties (length)
			Students shall demonstrate and apply
			knowledge of matter, including properties and
			changes, using appropriate safety procedures,
Chamistry (ngs. 25			equipment, and technology: Model the motion
Chemistry (pgs. 25-41)	AR	SCI.5.PS.5.5.8	and position of molecules in solids, liquids, and gases in terms of kinetic energy
41)	AIX	301.5.F3.5.5.6	Students shall demonstrate and apply
			knowledge of matter, including properties and
			changes, using appropriate safety procedures,
			equipment, and technology: Investigate
			scientists, careers, and historical breakthroughs
Chemistry (pgs. 25-			related to physical properties, physical changes,
41)	AR	SCI.5.PS.5.5.10	and states of matter
,		22 2.0.0.10	
		Pushing the Enve	elope
		2005 Science	
		Curriculum Frame	ework
Arkansas Science			
Grade 6			
Activity/Lesson	State	Standards	

			Students shall demonstrate and apply knowledge of motion and forces using
History of Aviation			appropriate safety procedures, equipment, and technology: Investigate careers, scientists, and historical breakthroughs related to compound
Propulsion (pgs. 5-9)	AR	SCI.6.PS.6.6.10	machines and forces
			Students shall demonstrate and apply
Types of Engines (pgs. 11-23)	AR	SCI.6.PS.6.6.7.b	knowledge of motion and forces using appropriate safety procedures, equipment, and technology: Describe the effects of force (speed up, slow down or change the direction of motion)
Types of Engines (Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology: Conduct investigations to calculate the change in speed caused by applying forces
pgs. 11-23)	AR	SCI.6.PS.6.6.9	to an object Students shall demonstrate and apply
Chemistry (pgs. 25-41)	AR	SCI.6.PS.5.6.2	knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology: Compare and contrast characteristics of physical and chemical properties
Physics and Math (pgs. 43-63)	AR	SCI.6.PS.5.6.4	Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology: Apply skills of scientific investigation to determine density using SI units
Physics and Math (pgs. 43-63)	AR	SCI.6.PS.6.6.3	Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology: Conduct investigations of various forces using SI units (newton)
Physics and Math (pgs. 43-63)	AR	SCI.6.PS.6.6.4.b	Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology: Recognize and give examples of different types of forces (magnetic forces)
Physics and Math (pgs. 43-63)	AR		Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology: Describe the effects of force (move a stationary object)
Physics and Math (pgs. 43-63)	AR		Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology: Describe the effects of force (speed up, slow down or change the direction of motion)

			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
Physics and Math			technology: Describe the effects of force
(pgs. 43-63)	AR	SCI.6.PS.6.6.7.c	(change the shape of objects)
(P30: 10 00)	7 \		Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
Dhusiaa and Math			technology: Conduct investigations to
Physics and Math			demonstrate change in direction caused by
(pgs. 43-63)	AR	SCI.6.PS.6.6.8	force
			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
			technology: Conduct investigations to calculate
Physics and Math			the change in speed caused by applying forces
(pgs. 43-63)	AR	SCI.6.PS.6.6.9	to an object
(I-D			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
			technology: Investigate careers, scientists, and
Physics and Math			historical breakthroughs related to compound
	AR	SCI.6.PS.6.6.10	machines and forces
(pgs. 43-63)	AR	301.0.23.0.0.10	
			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
Rocket Activity (pgs.			technology: Conduct investigations of various
69-75)	AR	SCI.6.PS.6.6.3	forces using SI units (newton)
			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
Rocket Activity (pgs.			technology: Recognize and give examples of
69-75)	AR	SCI.6.PS.6.6.4.b	different types of forces (magnetic forces)
			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
Rocket Activity (pgs.			technology: Describe the effects of force (move
69-75)	AR	SCI 6 PS 6 6 7 a	a stationary object)
00 10)	7.11.1	001.0.1 0.0.0.1 .u	a stationary object/
			Students shall demonstrate and apply
			knowledge of motion and forces using
Doolsof Anti-its / mas-			appropriate safety procedures, equipment, and
Rocket Activity (pgs.	A.D.	001000000	technology: Describe the effects of force (speed
69-75)	AR	SCI.6.PS.6.6.7.b	up, slow down or change the direction of motion)
			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
			technology: Conduct investigations to
Rocket Activity (pgs.			demonstrate change in direction caused by
69-75)	AR	SCI.6.PS.6.6.8	force
•	•	<u> </u>	

			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
			technology: Conduct investigations to calculate
Rocket Activity (pgs.			the change in speed caused by applying forces
69-75)	AR	SCI.6.PS.6.6.9	to an object
09-73)	AR	301.0.63.0.0.9	to an object
		Pushing the Env	relope
		2005 Science	
		Curriculum Fram	ework
Arkansas Science			
Grade 7			
Activity/Lesson	State	Standards	
			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
			technology: Investigate careers, scientists, and
History of Aviation			historical breakthroughs related to laws of
Propulsion (pgs. 5-9)	AR	SCI.7.PS.6.7.6	motion
(F3)			Students shall demonstrate and apply
			knowledge of matter, including properties and
			changes, using appropriate safety procedures,
			equipment, and technology: Identify compounds
Chemistry (pgs. 25-			as substances consisting of two or more
	AD.	SCI.7.PS.5.7.3	J
41)	AR	301.7.23.3.7.3	elements chemically combined
			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
Physics and Math			technology: Compare and contrast Newton's
(pgs. 43-63)	AR	SCI.7.PS.6.7.1	three laws of motion
			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
Physics and Math			technology: Conduct investigations
(pgs. 43-63)	AR	SCI.7.PS.6.7.2	demonstrating Newton's first law of motion
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
Physics and Math			technology: Demonstrate Newton's second law
(pgs. 43-63)	AR	SCI.7.PS.6.7.3	of motion
(pgs. +0-00)	/ u \	001.7.1 0.0.7.3	Students shall demonstrate and apply
			knowledge of motion and forces using
Dhysica and Matte			appropriate safety procedures, equipment, and
Physics and Math	A.D.	001700074	technology: Conduct investigations of Newton's
(pgs. 43-63)	AR	SCI.7.PS.6.7.4	third law of motion
			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
			technology: Explain how Newton's three laws of
Physics and Math			motion apply to real world situations (e.g.,
	AR	SCI.7.PS.6.7.5	sports, transportation)

			Students shall demonstrate and apply
			Students shall demonstrate and apply
			knowledge of motion and forces using
Da alaat A atia ita a ka ara			appropriate safety procedures, equipment, and
Rocket Activity (pgs.	4.5	001700074	technology: Compare and contrast Newton's
69-75)	AR	SCI.7.PS.6.7.1	three laws of motion
			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
Rocket Activity (pgs.			technology: Conduct investigations of Newton's
69-75)	AR	SCI.7.PS.6.7.4	
			Students shall demonstrate and apply
			knowledge of motion and forces using
			appropriate safety procedures, equipment, and
			technology: Explain how Newton's three laws of
Rocket Activity (pgs.			motion apply to real world situations (e.g.,
69-75)	AR	SCI.7.PS.6.7.5	sports, transportation)
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		2005 Science Curriculum Fran	
Arkansas Science		Curriculani i ran	ilework
Grades 9-12 (Physic	al Science)		
Activity/Lesson	State	Standards	
7.00.7.107.2000.1.	- Class	O turidur do	
			Students shall demonstrate an understanding of
Types of Engines (SCI.9-	the role of forces in physics: Compare and
pgs. 11-23)	AR	12.P.6.PS.3	contrast among speed, velocity and acceleration
			Students shall demonstrate an understanding of
			the role of forces in physics: Solve problems
Types of Engines (SCI.9-	using the formulas for speed and acceleration (v
pgs. 11-23)	AR	12.P.6.PS.4.a	= d/t)
pgc. 11 20)	7.0.2	12.110.110.110	Students shall demonstrate an understanding of
			matter's composition and structure: Compare
			and contrast chemical and physical properties of
			matter, including but not limited to flammability,
Chemistry (pgs. 25-		SCI.9-	reactivity, density, buoyancy, viscosity, melting
41)	AR	12.C.1.PS.1	point and boiling point
•••	, u \	12.0.1.1 0.1	Students shall demonstrate an understanding of
Chemistry (pgs. 25-		SCI.9-	the role of energy in chemistry: Compare and
41)	AR	12.C.2.PS.4	contrast Boyle's law and Charles' law
111	, u x	12.0.2.1 0.7	Students shall compare and contrast chemical
Chemistry (pgs. 25-		SCI.9-	reactions: Identify and write balanced chemical
41)	AR	12.C.3.PS.1.e	equations (combustion reaction)
71/	, u x	12.0.0.1 0.1.6	Students shall demonstrate an understanding of
Physics and Math		SCI.9-	the role of forces in physics: Compare and
(pgs. 43-63)	AR	12.P.6.PS.6	contrast Newton's three laws of motion
(pgs. 40-00)	\(\tau\)	12.1.0.53.0	Students shall demonstrate an understanding of
Dhysics and Math		SCI 0	the role of forces in physics: Design and conduct
Physics and Math	A D	SCI.9-	investigations demonstrating Newton's first law
(pgs. 43-63)	AR	12.P.6.PS.7	of motion

			Students shall demonstrate an understanding of
			the role of forces in physics: Conduct
Physics and Math		SCI.9-	investigations demonstrating Newton's second
(pgs. 43-63)	AR	12.P.6.PS.8	law of motion
(pgs. 40 00)	7 11 1	12.1 .0.1 0.0	Students shall demonstrate an understanding of
			the role of forces in physics: Design and conduct
Physics and Math		SCI.9-	investigations demonstrating Newton's third law
(pgs. 43-63)	AR	12.P.6.PS.9	of motion
(pgs. 45-05)	\(\alpha\)	12.1 .0.1 3.9	Students shall demonstrate an understanding of
			the role of forces in physics: Calculate force,
			mass, and acceleration using Newton's second
Physics and Math		SCI.9-	law of motion: F=ma, Where f=force, m=mass,
(pgs. 43-63)	AR	12.P.6.PS.10.a	a=acceleration
(pgs. 45-05)	\(\alpha\)	12.1 .0.1 3.10.a	Students shall demonstrate an understanding of
			the role of forces in physics: Calculate force,
			mass, and acceleration using Newton's second
Physics and Math		SCI.9-	law of motion: F=ma, Where f=force, m=mass,
(pgs. 43-63)	AR	12.P.6.PS.10.b	a=acceleration
(pgs. 45-65)	AR	12.7.0.73.10.0	Students shall demonstrate an understanding of
Rocket Activity (pgs.		SCI.9-	the role of forces in physics: Compare and
69-75)	AR	12.P.6.PS.6	contrast Newton's three laws of motion
09-73)	AR	12.7.0.73.0	Students shall demonstrate an understanding of
Dooket Activity (pgs		SCI.9-	the role of forces in physics: Design and conduction investigations demonstrating Newton's third law
Rocket Activity (pgs.	AR	12.P.6.PS.9	of motion
69-75)	AR	12.7.0.73.9	
			Students shall demonstrate an understanding of the role of forces in physics: Calculate force,
			mass, and acceleration using Newton's second
Rocket Activity (pgs.		SCI 0	law of motion: F=ma, Where f=force, m=mass,
69-75)	AR	SCI.9- 12.P.6.PS.10.a	a=acceleration
09-10)	AN	12.F.0.F3.10.a	Students shall demonstrate an understanding of
			the role of forces in physics: Calculate force,
			mass, and acceleration using Newton's second
Rocket Activity (pgs.		SCI.9-	law of motion: F=ma, Where f=force, m=mass,
69-75)	AR	12.P.6.PS.10.b	a=acceleration
09-10)	AIX	12.1 .0.1 0.10.0	a-acceleration
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		2005 Science	
		Curriculum Fram	
Arkansas Science			
Grades 9-12 (Physics	s)		
Activity/Lesson	State	Standards	
			Students shall understand the relationship
			between work and energy: Prove the
			relationship of time, energy and power through
History of Aviation		SCI.9-	problem solving (Where P = power; W = work; F
Propulsion (pgs. 5-9)	AR	12.MF.4.P.5.c	= force; v = velocity; T = time)
/			Students shall understand one-dimensional
			motion: Apply kinematic equations to calculate
	1	0010	
Types of Engines (SCI.9-	distance, time, or velocity under conditions of

			Students shall understand one-dimensional
			motion: Apply kinematic equations to calculate
Types of Engines (SCI.9-	distance, time, or velocity under conditions of
	AR	12.MF.1.P.3.b	constant acceleration (a(ave) = delta v/delta t)
pgs. 11-23)	AR	12.1017.1.7.3.0	
			Students shall understand one-dimensional
			motion: Apply kinematic equations to calculate
			distance, time, or velocity under conditions of
Types of Engines (SCI.9-	constant acceleration (delta $x = 1/2 (v(f) + v(f))$
pgs. 11-23)	AR	12.MF.1.P.3.c	(delta t))
			Students shall understand the relationship
			between work and energy: Prove the
Types of Engines (SCI.9-	relationship of time, energy and power through
pgs. 11-23)	AR	12.MF.4.P.5.b	problem solving (P = Fv)
P 3 - 7			Students shall understand the concepts of fluid
			mechanics: Use the ideal gas law to predict the
Chemistry (pgs. 25-		SCI.9-	properties of an ideal gas under different
41)	AR	12.MF.6.P.4.a.4	conditions
71)	\(\alpha\)	12.1011 .0.1 .4.a.4	Students shall understand the concepts of fluid
Ob a maile to m. / / m. m. = 0.00		001.0	mechanics: Use the ideal gas law to predict the
Chemistry (pgs. 25-		SCI.9-	properties of an ideal gas under different
41)	AR	12.MF.6.P.4.b.4	conditions
			Students shall understand one-dimensional
Physics and Math		SCI.9-	motion: Apply Newton's first law of motion to
(pgs. 43-63)	AR	12.MF.1.P.9	show balanced and unbalanced forces
			Students shall understand one-dimensional
			motion: Apply Newton's second law of motion to
Physics and Math		SCI.9-	solve motion problems that involve constant
(pgs. 43-63)	AR	12.MF.1.P.10.a	forces (F = ma)
,			Students shall understand one-dimensional
Physics and Math		SCI.9-	motion: Apply Newton's third law of motion to
(pgs. 43-63)	AR	12.MF.1.P.11	explain action-reaction pairs
(pgc. 10 00)	7	12	Students shall understand two-dimensional
Physics and Math		SCI.9-	motion: Calculate the magnitude and direction of
(pgs. 43-63)	AR	12.MF.2.P.3.a	a vector from its components ($d^2 = x^2 + y^2$)
(pgs. 45-05)	\(\alpha\)	12.IVII .Z.I .J.a	Students shall understand two-dimensional
Dhysiae and Math		0010	motion: Calculate the magnitude and direction of
Physics and Math	1	SCI.9-	a vector from its components (tan to the -1
(pgs. 43-63)	AR	12.MF.2.P.3.b	power (theta) = x/y)
			Students shall understand one-dimensional
Rocket Activity (pgs.		SCI.9-	motion: Apply Newton's first law of motion to
69-75)	AR	12.MF.1.P.9	show balanced and unbalanced forces
			Students shall understand one-dimensional
Rocket Activity (pgs.		SCI.9-	motion: Apply Newton's third law of motion to
69-75)	AR	12.MF.1.P.11	explain action-reaction pairs
			Students shall understand the relationship
			between work and energy: Calculate net work
Rocket Activity (pgs.		SCI.9-	done by a constant net force (W(net) = F(net) d
69-75)	AR	12.MF.4.P.1.a	cos theta)
33 70,	[/ M X	12.1VII .T.I . I.A	jood triotaj